Team (Content, Load Balance, Presentation)

Individual (Coverage of content, Answer to Questions, Presentation skills)

IOFT

$$x(n) = \frac{1}{N} \sum_{K=0}^{N-1} X(K)\, e^{\frac{J2\pi nK}{N}}$$

$$e^{\pm j\theta} = \cos\theta \pm j\sin\theta$$

$$W_N^{-Kn} = \left[\quad\right]_{N\times N}$$

التغيير حيث نيا مجزاد Complex
حيث أسرايد شارة تغيير

$$W_4^{-Kn} = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & +j & -1 & -j \\ 1 & -1 & 1 & -1 \\ 1 & -j & -1 & +j \end{bmatrix}$$

① $N =$ ✓

② W_N^{-nK}

③ Matrix Mutiplication

⇒ Turn over

* Example: $X(K) = \{0, 1-j, 0, 1+j\}$

(1) $N = 4$

(2) $W_N^{-Kn} = W_4^{-Kn}$

(3) Matrix Multiplication

$$\frac{1}{4}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -j & -1 & j \\ 1 & -1 & 1 & -1 \\ 1 & j & -1 & -j \end{bmatrix}\begin{bmatrix} 0 \\ 1-j \\ 0 \\ 1+j \end{bmatrix}$$

$$x(n) = \{2, 2, 1, 1\}$$

* Example $X(K) = \{4, 1-j, -2, 1+j\}$

(1) $N = 4$

(2) $W_N^{-Kn} = W_4^{-Kn}$

(3) Matrix Multiplication

$$\frac{1}{4}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & j & -1 & -j \\ 1 & -1 & 1 & -1 \\ 1 & -j & -1 & +j \end{bmatrix}\begin{bmatrix} 4 \\ 1-j \\ -2 \\ 1+j \end{bmatrix}$$

$$x(n) = \{1, 2, 0, 1\}$$